

Performance Objectives And Instructional Cues	OUTLINE AND PRESENTATION
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XVII.A OPERATION OF PATROL VEHICLE

INTRODUCTION

Introduction to Emergency Vehicles (E.V.O)

Instructional Goals

1. This course will provide information that supports a need for advanced emergency vehicle drivers training for police officers.
2. This course stresses the importance of proper mental conditioning associated with emergency vehicle operation.
3. This course will provide the student with a basic understanding of emergency vehicle equipment and operation.
4. This course will provide the student with a thorough understanding of normal patrol emergency vehicle operation.

Objectives

Upon completion of this course, students will be able to:

1. Understand how emergency vehicle operation can be dangerous and why advanced drivers' training is essential.
2. Understand the five essential elements of emergency vehicle operation.
3. Understand the elements of an accident.
4. Understand the most common law enforcement accidents.
5. Understand defensive driving and its importance in emergency vehicle operation.
6. Understand differences between police and standard package vehicles.
7. Understand police vehicle equipment and maintenance.
8. Understand design and function of anti-lock brake systems.
9. Understand principles of proper braking.

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10. Understand vehicle speed and relationship to emergency vehicle operation.
11. Understand use and function of occupants' protection devices.
12. Understand need to maintain safe following distance.
13. Understand principles and technique of proper passing and lane change.
14. Understand importance of adjusting speed to existing conditions.
15. Understand the limitations associated with night driving.
16. Understand how speed and night driving conditions affect peripheral vision.
17. Understand the limiting effects the natural elements can have on vehicle operation.
18. Understand various road surfaces and characteristics.

Instructional Methods

Class lecture with class participation, handout materials, overhead and audio visual aids.

Time Allocation: 3 hours

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Bibliography:

Turner, Richard H (1982). Tactical Police Driving/NAPD Instructors Guide. NAPD Publishing Company. Hutchins TX

Scott, Anthony (1988). Police Driving Techniques/SSDD Instructor Guide. Prentice-Hall Inc. Englewood Cliffs, NJ

Beach-Morris-Smith (1993). Emergency Vehicle Operations. Pecos Press. Tulsa OK

New Mexico State Police Pursuit Driving Manual.

Pennsylvania State Police Emergency Vehicle Operations.

OUTLINE AND PRESENTATION

1) Bad Attitudes

- (a) Overconfidence
 - (1) Show off
 - (2) Invincible
 - (3) Unnecessary risks
- (b) Lack of Confidence
 - (1) Fear vehicle/maneuvers
 - (2) Insecurity due to inexperience/bad experience
 - (3) Anxiety symptoms
- (c) Self Righteous
 - (1) Above law
 - (2) Never wrong
 - (3) Won't accept any criticism
- (d) Impatient
 - (1) Always in a hurry
 - (2) Other drivers are adversaries
 - (3) Common characteristics
 - (I) Speeding
 - (II) Improper passing
 - (III) Improper lane change
 - (IV) Following too close

Bad attitudes are not inborn or inherited, rather they are created, evolve and become reinforced through repetition which means they can be changed.

2. Judgement

- a) Drivers are taught skills and coordination of mind and body; good judgment comes from experience and a good attitude.
- b) Physiologically speaking young drivers have the best reflexes, eyesight, hearing and reasonable psychomotor skills yet they have the highest accident rates. Q. Why? A. Poor judgement.
- c) The driver who perceives hazards far enough in advance to avoid accidents and loss of control demonstrates good judgement.

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3. Awareness

- a) Operation of an emergency vehicle requires full time attention and concentration.
- b) Officers are easily preoccupied with job. (Radio, MDT, observe traffic, etc.)
- c) Emotions have a profound effect on a driver's awareness and ability to evaluate their surroundings. When overcome by emotion the normally competent driver becomes a liability.
- d) Tests show that accident-prone drivers share some of the same deficiencies; one is attention failure or awareness.

4. Training

- a) Driver training for law enforcement personnel has not always been given a high priority. This is partially due to the complacent attitude about driving that prevailed especially when compared to such other activities as firearms training.
- b) E.V.O. is statistically one of the most dangerous activities in law enforcement.
- c) It is ridiculous to assume that because a person possesses a driver's license that they would be a capable emergency vehicle operator.
- d) Law enforcement officers must be skilled in performance principles and techniques as they relate to steering, braking, apexing as well as understand the mental and legal aspects of emergency vehicle response.

5. Experience

- a) As drivers mature past their mid-twenties accident rates drop drastically. These drivers have reached a higher level of maturity. This translates to improved emotional control and a refined ability to perceive hazards.

LO3

OHD 2
(Drivers Triangle)

- b) Experience can also be a negative quality if the experienced driver displays an attitude or style of driving that suggests arrogance to laws or other drivers. These drivers feel that time behind the wheel itself automatically equates to higher proficiency, which is not necessarily true.

C. Accident Driver Triangle

Accidents are caused by a failure of one of the three elements that make up the driving system or drivers triangle. Those three elements are environment, vehicle and driver.

1. Environment

- a) Police officers are automatically at a distinct disadvantage because they have to drive in the worst weather.
 - 1) Can't stay home when weather is bad.
 - 2) Busiest time for police.
- b) Most weather related accidents are the result of the driver failing to compensate and has an accident.
 - 1) Ex. Speed too fast for conditions.
 - 2) Ex. Following too close.

2. Vehicle

- a) Today's police package vehicles are some of the best made.
- b) No matter how well made, it is a machine and has limitations.
- c) Limitations are aggravated when maintenance is poor or insufficient.
- d) Legitimate mechanical failure does occur, however most failures are attributed to poor or relaxed maintenance standards.

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3. Driver

- a) The driver is the most destructive element.
- b) The driver is the only truly flexible and adaptable factor yet is consistently responsible for approximately 90% of all accidents nationwide.
- c) As a society we are doing a poor job as drivers.
 - 1) Most don't acknowledge deficiencies.
 - 2) Formal Drivers Ed is very limited.
- d) Fact; our experiences good or bad and experience level influences our driving dramatically.
- e) Drivers disassociate themselves from accidents as if they weren't there. Ex. My car hit another car that blew the intersection.
- f) We must understand and accept the fact that we the drivers are the problem with accidents.

D. Common Police Accidents

1. Following too close (tailgating)

- a) Leaves too little time to react to braking front vehicle.
- b) Job requires getting close in traffic (license, identification, suspicious activity).
- c) Common occurrence is not being prepared for panic response from drivers when emergency equipment is activated.
- d) Extend following distance.
 - 1) Minimum 3 seconds at normal speed.

2. Lane Changes

- a) Sudden lane changes with little or no warning annoys other drivers and causes accidents.

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- b) Develop a style of lane change that signals intention, smooth and considerate of other drivers.
- 3. Driving faster than conditions allow.
 - a) A mission of law enforcement is that officers respond to certain situations above the legal speed limit.
 - b) Even though there is an emergency you the police officer cannot drive at speeds that make you a hazard to others.
 - c) You do not have the right or authority to exceed a safe speed regardless of the emergency.
 - d) The emergency vehicle operator must be conditioned to recognize and respond to accident causing situations.
 - 1) The E.V.O. must understand the effects of speed on vehicle dynamics and its relationship to control and braking ability.
- 4. Your presence and other drivers.
 - a) The use of emergency equipment is critical to your success in any emergency response.
 - b) The use of emergency equipment is not a matter of choice; it's a matter of law.
- 5. Driving while emotionally unstable.
 - a) Multitude of emotions involved in emergency vehicle operation.
 - b) Never let your emotions influence your driving or cloud your judgment to such an extent it reduces your ability to operate your emergency vehicle responsibly.
- 6. National Safety Council (NSC) found that 90% of all police accidents occurred while parked or under 40

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<p>LO5</p> <p>OHD 3 (Defensive Driver Definition)</p> <p>LO6</p>	<p>mph.</p> <p>a) The three most common police accidents></p> <ol style="list-style-type: none"> 1) Parking 2) Backing 3) Failure to yield <p>E. Defensive Driving</p> <ol style="list-style-type: none"> 1. As an E.V.O. your primary responsibility should be to become a superior defensive driver. <p>Defensive Driver (Definition) A defensive driver is one who drives in a manner to avoid accidents regardless of what the law says, mistakes made by other drivers or adverse driving conditions encountered.</p> <ol style="list-style-type: none"> 2. As a police officer your primary duty is to insure the safety of the public. 3. The public expects police officers to be highly skilled and responsible drivers. 4. Accidents and improper driving behavior are harmful to the police image. 5. When an officer is involved in a collision regardless of fault that image is eroded to some degree. <p>F. Police Package Vehicle</p> <ol style="list-style-type: none"> 1. Most departments buy the best vehicles they can afford. This is generally their largest expense item. 2. Police package vehicles are designed to be fast and maneuverable to minimize exposure. Police vehicles are also more stable to compensate for changes in direction and evasive maneuvers. 3. Maintenance and inspection are dictated by department policy.

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OHD 4 (Police Package Equipment)	<ul style="list-style-type: none"> a) Officer is ultimately responsible for monitoring and reporting condition of vehicle. b) Officers well-being depends on condition of vehicle. <p>4. Police package vs. Standard package.</p> <ul style="list-style-type: none"> a) Heavier chassis due to added reinforcement and components. (frame, springs, shocks, swaybar). b) Larger capacity radiator for additional cooling. c) Motor and transmission oil coolers. d) Heavy duty deep cycle battery. e) 60-100 amp. Alternator. f) Dual exhaust/large diameter. g) Reinforced drivers seat. h) Structural body re-enforcement. i) Stronger gauge steel wheels. j) Heavy duty brake. k) High performance motor. <p>Note: The same year, make and model standard vehicle has nowhere near the same performance potential.</p> <p>5. Marked Police Patrol Vehicle</p> <ul style="list-style-type: none"> a) The marked police vehicle is designed to project or demonstrate an omnipresence of the law. b) Advantages of using a marked police vehicle are that it is easily identifiable with emergency equipment and performance options that make the police officers job safer and more productive. c) Disadvantages of a marked police vehicle are

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that it can give officers a false sense of security and is difficult to move in traffic due to reaction from other motorists.

6. Unmarked Police Vehicle

- a) Generally assigned to staff and plain-clothes personnel.
- b) Advantage is that it's less identifiable as a police vehicle.
- c) Disadvantage is that it may or may not be a police package and have same performance potential.
Due to lack of required equipment it should not be used in emergency response.

7. Police Utility Vehicles

- a) Increased need and diversity of law enforcement requires more specialized utility vehicles.
 - 1) Search and rescue.
 - 2) Canine.
 - 3) Marine patrol.
 - 4) Special operations.
- b) These specialized vehicles include sport utility, 2 and 4 wheel drive, pickups and vans.
- c) Some vehicles are used for specific job tasks however many SUV's and pickups are in use as normal patrol vehicles.
- d) These vehicles have capabilities that make them advantageous in certain situations (4-wheel drive/cargo capacity) however in most cases they are engineered for emergency operation.
- e) While some SUV's and pickups have certain factory and after market options which enhance

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LO7	<p>their performance potential they still have limited ability.</p> <ul style="list-style-type: none"> f) Use of these vehicles should be limited to activities other than emergency response and pursuit. g) If these vehicles are used the driver should operate with the knowledge that vehicle performance potential is limited by design and vehicle should be operated accordingly. <p>G. Emergency Vehicle Equipment and Maintenance</p> <ul style="list-style-type: none"> 1. Maintenance of police vehicles is dictated by department policy. 2. Maintenance can be contracted locally for agencies like local police or county sheriff and statewide for agencies like state police, motor transportation, etc. 3. While not responsible for the work the officer is responsible for following maintenance schedule and advising supervisor of any operational concerns that could affect safety and performance of vehicle. 4. Officers should be familiar with major operating components of the police vehicle and their maintenance requirements. <ul style="list-style-type: none"> a) Motor <ul style="list-style-type: none"> 1) Police vehicles are subject to cold starts, long periods of idling, extreme heat and cold and high speeds. 2) Major cause of engine failure is poor maintenance of operational fluids. <ul style="list-style-type: none"> (a) check regularly (all fluids) (b) check for leaks (c) color of leak can determine origin

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b) Shock absorbers

- 1) There is a misconception that shocks support the weight of the vehicle.
 - (a) Shocks limit or dampen the travel of the wheel.
 - (b) Springs support weight of vehicle.
- 2) Shocks lose 30-35% of capability after 25,000 miles.
- 3) Worn shock absorbers allow:
 - (a) Excessive sway/roll
 - (b) Lost traction
 - (c) Wheel hop/uneven tire wear

c) Tires

- 1) Police vehicles use speed rated radial tires.
- 2) Advantage is thin sidewall flexes allowing more tread to stay on ground during high speed cornering therefore increasing performance and traction.
- 3) Disadvantage is that this sidewall is susceptible to cuts and bruising and low squatty profile makes it difficult to visually gauge air pressure.
 - (a) Always physically gauge radial tires to determine proper pressure.
- 4) The major problem with tires on police vehicles is under-inflation and misalignment.

d) Brakes

- 1) Brakes are the most sensitive and most abused equipment on the police vehicle.
- 2) Most police vehicles are equipped with

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LO9	<p>system during heavy emergency braking hold pedal down and do not pump brake pedal.</p> <p>6) A warning light on the dashboard indicates a system malfunction.</p> <p>H. Proper Braking</p> <ol style="list-style-type: none"> 1. Riding the brakes during emergency response can lead to brake fade (no brakes) very quickly. 2. Left foot braking is not encouraged however if you do be aware of riding the brakes. <ol style="list-style-type: none"> a) Even slight touching of brake pedal will cause disc/pads to touch and heat up. 3. When braking use upper part of foot (ball of foot) and keep heel on floor for greater sensitivity and quicker response. 4. As drivers we use our brakes to excess, which is an indication of our inability to pre-plan our actions. <ol style="list-style-type: none"> a) Common Causes of brake abuse are <ol style="list-style-type: none"> 1) Improper application 2) Following too close 3) Racing up to stop signs/traffic signals 4) Closing too fast on violators (police) 5) Excessive use during code operation (police) 5. The two types of braking are controlled and threshold. <ol style="list-style-type: none"> a) Controlled braking occurs when there is ample distance involved for the driver to use light brake pedal pressure to bring the vehicle to a gradual stop. b) Threshold braking occurs when we are forced to

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<p>OHD 6 (What ABS doesn't do)</p> <p>OHD 7 (Benefits of ABS)</p> <p>LO10</p>	<p>stop as quickly as we can in the shortest distance possible.</p> <p>6. The proper way to threshold brake is determined by your brake system.</p> <p>a) Non Anti-Lock Brake System</p> <ol style="list-style-type: none"> 1) Driver must apply brakes to a point just short of lock-up. 2) If brakes lock you must release to get wheels rolling and re-apply. 3) The problem with this system is that during hard braking the vehicle was always on verge of lock-up. This also resulted in longer stopping distances. <p>b) Anti-lock Brake System</p> <ol style="list-style-type: none"> 1) New anti-lock brake systems allows driver to threshold brake much more efficiently without fear of lock-up. 2) Anti-lock brakes also remove the human errors that were generally associated with emergency braking. <p>7. The most determining factor in the condition of your brakes will be your driving style.</p> <p>I. Speed Control</p> <ol style="list-style-type: none"> 1. In law enforcement there are any numbers of reasons to increase your vehicle speed. 2. Acceleration should always be smooth. Sudden acceleration causes excessive load and a reduction in traction. 3. As an E.V.O. you must learn to adjust your speed to the ever-changing weather and road conditions. 4. With all the activity associated with an emergency

LO11

response your speed can become very deceiving.

5. Often times the only difference between making the turn or losing control is 2-3 mph.

J. Occupant Protection

1. Officers are 10 times more likely to be involved in a collision than average drivers.
2. Motor vehicle collisions are a leading cause of injury/death to officers.
3. On average, an officer will be involved in a collision every 28,000 miles.
 - a) One in five result in injury/death.
4. Occupant protection devices are divided into two categories.
 - a) Active – Safety Belt/Door Locks
 - b) Passive – Air bags
5. Safety belts redistribute crash forces to areas of the body strong enough to absorb them.
6. Safety belts keep you from being thrown into objects within the passenger compartment (steering wheel, dash, radio/computer, etc.) as well as keep you from being ejected.
7. Safety belts also keep you behind the wheel during violent maneuvers.
 - a) You can't drive the vehicle if you're not behind the wheel.
8. Seatbelt must be properly adjusted.
 - a) Low on hips.
 - b) Snug across shoulders.

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<p>OHD 8 (Secure Equipment)</p> <p>LO12</p>	<ol style="list-style-type: none"> 9. A locked door can withstand 10 times the impact force of an unlocked door. 10. A locked door reduces chances of doors popping open and helps maintain structural integrity during collisions and rollovers. 11. Airbags are cloth bags packed into strategic areas of passenger compartment, steering wheel, dashboard or side doors depending on the make/model. Almost all police vehicles have driver and passenger frontal air bags. 12. Airbags are generally activated by sensors located in the front bumper and firewall during impacts of 28 mph or greater. <ol style="list-style-type: none"> a) A nitrogen gas charge inflates bag in milliseconds. 13. Very important that officers don't allow any equipment to be mounted where it would interfere with bag deployment. 14. Airbags are designed to work in conjunction with safety belts, not to replace them. <p>K. Following Distance</p> <ol style="list-style-type: none"> 1. Following distance is problematic to police work due to nature of the job. <ol style="list-style-type: none"> a) Drivers overreact when they see approaching police vehicle in rear view mirror. b) Police work is distracting to officer/driver. (Radio, mobile data terminal, observing activities) 2. As an E.V.O. you must develop a habit of maintaining a safe following distance. <ol style="list-style-type: none"> a) Makes you safer. b) Projects a better public image. 3. To regulate following distances the 3-second rule should

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LO13	<p>be used for normal driving conditions.</p> <ol style="list-style-type: none"> During emergency response, following distances should be increased accordingly. <p>L. Lane Change</p> <ol style="list-style-type: none"> Most drivers involved in lane change accidents had no reason to be changing lanes in the first place. Drivers obsessed with changing lanes are very disruptive to traffic flow; they dart in and out of traffic and generally gain very little in terms of time and distance. Steps for proper lane change. <ol style="list-style-type: none"> Question the move.. Is it necessary? What gain? Check adjacent lane (use mirror). Indicate your intention (signal). Confirm your intention (check mirror/blind spot). Make movement smooth and gradual.
LO13	<p>M. Passing</p> <ol style="list-style-type: none"> As a police officer you will pass often in the performance of your job. Passing is a normal function of driving. Before making the decision to pass another vehicle you should ask why is it necessary and what will be gained. <p>Example: If the vehicle you are considering passing has a long line of vehicles in front of it traveling at the same speed what will be gained?</p> <p>Example: If you decide to pass because the vehicle in front of you is traveling at a slower than normal speed and it's safe and legal your pass is justified.</p> <p>Example: If you want to pass because you can't stand anyone in front of you then you need to re-evaluate your thinking.</p>

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3. Police departments constantly address complaints regarding operation of department vehicles.
 - a) A common complaint is police passing/speeding for no apparent reason.
 - b) If the officer has no justification then he is taking advantage of his position and loses valuable credibility with the public.
4. Passing is dangerous because of the dynamics involved.
 - a) Especially true at high speed.
 - b) You are spending a critical amount of time in the wrong or opposing lane.

Example: You are traveling 50 mph and pass someone going 40 mph. You will need 10 seconds and 735 feet to complete pass.
5. Easy to misjudge closing distances at emergency speeds.
 - a) Extremely dangerous at night.
6. When passing consider the following.
 - a) Never pass on curves or intersections.
 - b) Be aware of vehicles entering the roadway from intersecting roads.
 - c) Make everyone clear of your intentions.
7. Passing guidelines
 - a) Oncoming cars, how far away, do I have enough time and space?
 - b) Is the pass legal?
 - c) Is the pass necessary?

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LO14	<div data-bbox="727 262 1482 1140"> <ul style="list-style-type: none"> d) Is the car you are passing aware of your presence? e) Is there any side road traffic? f) How long will the pass take? g) Check mirrors. h) Signal intention. i) Check mirror/blind spot. j) Start pass, accelerate around vehicle. k) When passed vehicle can be seen in rear view mirror you have enough distance to safely pull back in. l) Signal intention. m) Return to lane. n) Cancel signal. </div> <div data-bbox="537 1178 1482 1944"> <p>N. Driving too fast for conditions.</p> <ul style="list-style-type: none"> 1. Driving conditions are anything that could affect our ability to operate safely. Conditions could include: <ul style="list-style-type: none"> a) Weather b) Traffic density c) Pedestrians d) Special events 2. Conditions are subject to constant change and it is the responsibility of the driver to adjust to these changes. 3. The posted legal speed limit is based on ideal conditions. 4. As the operator of an emergency vehicle you are permitted under law to exceed the posted speed limit. </div>

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LO15	<ol style="list-style-type: none"> 5. As the operator of an emergency vehicle you are never permitted to drive too fast for existing conditions regardless of the emergency. 6. As an officer you will be required to drive in the worst conditions compounded by an array of emotions. 7. As an officer you must have the skill necessary to safely operate your vehicle and the knowledge and emotional maturity to adjust your driving to those varying conditions. <p>O. Night driving</p> <ol style="list-style-type: none"> 1. Night driving requires that you adjust your vehicle speed to the illumination of your headlights. 2. Illumination varies depending on type of headlights. <ol style="list-style-type: none"> a) Low Beam – approximately 200 feet b) High Beam – approximately 300 feet 3. Keep eyes moving, don't concentrate on illuminated area directly in front of your vehicle. <ol style="list-style-type: none"> a) Search areas at edge of darkness in front and on shoulders. 4. Headlights illuminate straight ahead, severely limits illuminations around curves. <ol style="list-style-type: none"> a) Limit reaction time b) Shortens reaction distance 5. Avoid looking into glare of on coming headlights. <ol style="list-style-type: none"> a) Can drastically reduce your vision. b) Looking into on coming light can blind for up to 7 seconds, at 55 mph that equals 725 feet. c) Look down and to the right of oncoming vehicle. 6. Estimating speed of closure is very difficult at night.
OHD 9 (Depth Perception Search Patterns)	

LO17

Q. Natural elements

1. As a police officer you will routinely drive in less than ideal weather conditions.
2. Adverse weather conditions effect law enforcement two ways.
 - a) Creates more activity, accidents/motorist assists.
 - b) Makes the job more difficult to do.
3. As discussed earlier, responding in bad weather even to an emergency doesn't give the officer the right to exceed the limits of control.
4. As a responding officer your primary responsibility is to arrive safely!
 - a) If you have an accident while enroute you have compounded the problem. Now someone has to handle the original call and you.
 - b) If you have a collision with another vehicle, liability?
 - c) If you are hurt or disabled, manpower/budget?
 - d) Damage to vehicle, lost resources/budget?
5. The general public expects their officers to be highly skilled, safe, responsible drivers regardless of the conditions.
 - a) Rain
 - 1) Poor visibility for you and other drivers.
 - 2) Asphalt is a petroleum-based product. Rain mixes with oil on surface and creates a very slick condition.
 - (a) Most dangerous time is first 30 minutes after a rain.
 - 3) Hydroplane is when a vehicle travels on a thin film of water and tires are not making

OHD 11
(Hydroplaning)

contact with road surface.

(a) Causes

- (1) Speed – As speed increases more water builds up in front of tires causing tire to ride up on water.
- (2) Large concentrations of water.
- (3) Tire condition – Worn tires with limited thread depth does not allow water to channel under tire.

(b) Corrections

- (1) Slow down
- (2) Be cautious of low-lying areas, dips, etc.
- (3) Maintain tires

4) Rain driving tips.

- (a) Drive slower than usual, you have less coefficient of friction (grip) therefore less control.
- (b) Don't change speeds or direction quickly, slow all control movements down.
- (c) Extend following distance.
- (d) Make sure wipers are in good condition before you need them.
- (e) Use headlights.

b) Snow, ice and freezing rain.

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- 1) Most hazardous conditions for drivers.
- 2) Ability to perform normal functions like acceleration, steering and braking greatly reduced.
- 3) Ice will appear as a glare on roadway; black ice is clear and unrecognizable.
- 4) Bridges and shaded areas are first to freeze and last to thaw.
- 5) Be especially cautious of rutted snow packed roads. Snow/slush against tires will cause vehicle to pull to side of most resistance.
- 6) In poor visibility and slick conditions try to remain moving at a slow pace. When you can pull off roadway in safe area. Do not stop on roadway.
- 7) Make yourself as visible as possible.
- 8) Slow down all control movements such as acceleration, braking and steering. Remember when conditions are slick your vehicle is incapable of responding to input the way it normally can.
- 9) Skid control techniques should be instinctive.
- 10) Make sure your vehicle is mechanically prepared – wiper, heater/defroster, tires, etc.
- 11) Be aware of where you park your vehicle while assisting motorists or at accident scenes during bad weather.
 - (a) Avoid areas that are high probability locations for out of control vehicles.
 - (1) Bottom of hills

(2) Outside curves

LO18

R. Road type/condition

1. Asphalt

- a) Each road type has its own unique characteristics.
- b) The majority of your driving time is spent on asphalt.
- c) Asphalt is a petroleum-based product.
 - 1) Oil blends to surface when hot.
 - 2) New asphalt has more oil than old.
 - 3) Old asphalt has slicker worn surface.
 - 4) Both can be very slick especially in rain.
- d) Asphalt moves or rolls up in very hot weather with the movement and braking action of heavy vehicles.
 - 1) Washboard effect is common in areas of heavy truck traffic.
 - 2) Washboard effect can cause vehicle at high speed to go out of control.

2. Concrete

- a) Due to its weight, concrete tends to have more bumps and dips than other surfaces.
- b) Holds water and will freeze and glaze over more quickly than asphalt.

3. Dirt/gravel

- a) Both dirt and gravel are considered unstable surfaces; therefore they have drastic effect on vehicle handling.

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- b) High speed operation on either of these surfaces should be tempered with sound professional judgment.
- c) Pursuit situations on dirt can put the officer at a distinct disadvantage due to limited visibility caused by dust raised from the front vehicle.
 - 1) Back off and maintain visibility of the roadway.
 - 2) Many police vehicles have been lost to officers who failed to turn because they never saw the turn.

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